N° 9454 A.D. 1915

Date of Application, 29th June, 1916

Complete Specification Left, 21st Dec., 1916—Accepted, 23rd Mar., 1916

PROVISIONAL SPECIFICATION.

Improvements in or relating to the Manufacture of Tyre Covers and in Moulds used in the said Manufacture.

I, FRANCIS ALBAN BYRNE, a Director of The Rubber Chemical Company Limited, of No. 2, Ludgate Hill, Birmingham, in the County of Warwick, Manufacturers, do hereby declare the nature of this invention to be as follows:—

My invention consists of the improvements hereinafter described in or relating to the manufacture of tyre covers and in the moulds used in the said manufacture the said improvements having for their principal objects to facilitate the manufacture of the said tyre covers and to reduce to a minimum the liability to distortion or damage of the tyre cover upon removal of the same from the core after the vulcanizing process.

In order that my invention may be the better understood I remark that in the manufacture of tyre covers to which my improvements relate the tyre cover before vulcanization is placed upon a ring core having a figure in cross section the same or approximately the same as that which it is desired the interior of the finished tyre cover shall have.

The unvulcanized tyre cover is placed in a two part mould the two ring parts of which meet in the plane containing the middle line of the tread of the tyre cover. With such two part ring moulds and cores some difficulty is experienced in the formation of the beads on the edges of the tyre cover and the production of tyre covers with defects such as necessitates their rejection as wasters is not infrequent, further, difficulty is experienced in the removal of the vulcanized tyre cover from the core.

My invention has for its object to permit the closing of the inner part of the mould, that is the part which retains the beads in shape during the vulcanizing process, last and thereby admit of the examination of the said beaded edges immediately prior to the final closing of the mould and the manipulation or alteration of the said edges if the same is required.

In carrying my invention into effect I employ a ring core of the ordinary kind or a ring core in three or more parts and a two part mould differing from the ordinary two part mould in the respect that the inner edge of each ring part will enclose only about one half of the outwardly projecting annular rib forming part of the beaded edge of the tyre cover the other part of the said annular rib and remaining part of the beaded edge which seats itself in the trough of the road wheel being enclosed by a separate or additional expansible ring preferably in three or more parts or segments.

I may form the core for the interior surface of the tyre cover in two ring parts each of which may be in one piece but is preferably in two or more segments, and a middle wedge shaped ring part in preferably three or more segments the middle wedge shaped part being pressed home between the other ring parts, so as to effect the separation of the said other parts of the core, by the inner or expansible ring part of the mould.

[*Price 6d.*]

By the construction and arrangement of the parts of the mould in the manner hereinbefore described not only is the proper formation of the beaded edges much facilitated but the removal of the tyre cover after the vulcanizing process can be effected without applying such force thereto as may result in damage to or distortion of the vulcanized tyre cover.

Dated this 28th day of June, 1915.

FRANCIS ALBAN BYRNE.

COMPLETE SPECIFICATION.

Improvements in or relating to the Manufacture of Tyre Covers and in Moulds used in the said Manufacture.

I, FRANCIS ALBAN BYRNE, a Director of The Rubber Chemical Company Limited, of No. 2, Ludgate Hill, Birmingham, in the County of Warwick, Manufacturers, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My invention consists of the improvements hereinafter described in or relating to the manufacture of tyre covers such for example as the covers for the pneumatic tyres of the wheels of motor road vehicles and in the moulds used in the manufacture of the said tyre covers the said improvements having for their principal objects to facilitate the manufacture of the said tyre covers and to reduce to a minimum the liability to distortion or damage of the tyre cover upon removal of the same from the core after the vulcanizing process.

In order that my invention may be the better understood I remark that in the manufacture of tyre covers to which my improvements relate the tyre cover before vulcanization is placed upon a ring core having a figure in cross section the same or approximately the same as that which it is desired the interior of the finished tyre cover shall have.

The unvulcanized tyre and core are placed in a mould and are subjected to heat for the purpose of vulcanization. With moulds and cores such as have been heretofore used or proposed some difficulty is experienced in the proper formation in the moulding process of the beads on the edges of the tyre cover and the production of tyre covers with defects such as necessitates their rejection as wasters is not infrequent; further, difficulty is experienced in the removal of the vulcanized tyre cover from the core.

My invention has for its principal object to permit the closing of the inner part of the mould, that is, the part which retains the beads in shape during the vulcanizing process, last, and thereby admit of the examination of the said beaded edges immediately prior to the final closing of the mould and the manipulation or alteration of the said edges if the same is required.

According to my invention I vulcanize the tyre cover in a mould comprising two ring parts, a core in one piece or in several sections or parts and an inner expansible ring the latter enclosing the portions of the tyre cover which when the cover is in use are seated in the trough of the wheel rim.

I may form the core for the interior surface of the tyre cover in two ring parts each of which may be in one piece but is preferably in two or more segments, and a middle wedge shaped ring part in preferably three or more segments the middle wedge shaped part being pressed home between the other ring parts, so as to effect the separation of the said other parts of the core, by the inner or expansible ring part of the mould.

A key with screwed stem may be provided to facilitate the withdrawal of the core from the vulcanized tyre cover when required.

I will further describe my invention in connection with the accompanying drawing Figure 1 of which represents in section the improved mould employed in carrying the improved manufacture constituting my invention into effect, the tyre cover and core being shown in position in the closed mould.

Figure 2 represents in section the improved mould illustrated in Figure 1 with a modified core constituting a further part of my invention.

Figure 3 represents a portion of Figure 2 drawn to a larger scale before the inner wedge shaped part of the core is forced home by the expansion of the inner ring part of the mould.

Figure 4 represents a portion of the core detached with a key for facilitating the removal of the core parts from the tyre cover after the vulcanizing process.

Referring to Figure 1 *a* is the core which may be in one piece or in several segmental parts meeting together end to end and *b*, *b* are two ring parts of the mould, the said ring parts *b* enclosing the whole of the exterior of the tyre cover excepting those parts which when the tyre cover is in use are seated on the wheel rim. The mould is completed by the inner expansible ring *c* the inner concave or flat face of which has preferably an annular rib or flange *d* which fits a groove in the inner side of the core as is illustrated in Figure 1. The expansible inner ring *c* is formed in several segmental parts and is operated by any expanding mechanism such as is known in tyre making machinery, for example I may employ an arrangement similar to that described in the Specification of Doughty's Patent No. 9167 of 1900 for expanding the core in the said patented moulding machine.

Where the core *a* Figure 1 is made in several sections or parts each may have a screwed hole into which the key *e* (see Figure 4) may be screwed when it is desired to withdraw the core from the vulcanized tyre cover. The screwed holes may be filled with grub screws when the core is to be inserted in the mould with an unvulcanized tyre cover thereon.

In Figures 2 and 3 I have represented a core made up of two rings *f*, *f* and an intermediate wedge shaped ring *g* in several sections or parts, the said wedge shaped ring being forced home and ensuring the compression of the unvulcanized rubber tyre cover in the mould when the expansible ring *c* of the mould is fully expanded.

The parts of the wedge shaped ring *g* may be withdrawn after the vulcanizing process in the same manner as is herein before described with reference to the withdrawal of the core *a* from the tyre cover after the vulcanizing process in the arrangement Figure 1.

By the construction and arrangement of the parts of the mould hereinbefore described and illustrated the proper formation of the beaded edges is much facilitated and the production of wasters is reduced to a minimum, and further the removal of the tyre cover after the vulcanizing process can be effected without applying such force thereto as is liable to damage or permanently distort the vulcanized tyre cover.

Having now particularly described and ascertained the nature of my invention and in what manner the same is to be performed, I declare that what I claim is:—

First:—Vulcanizing tyre covers in moulds comprising two ring parts, a core in one piece or in several sections or parts and a single inner expansible ring the latter enclosing the portions of the tyre cover which when the cover is in use are seated in the trough of the wheel rim.

Secondly:—Vulcanizing tyre covers in moulds of the kind described with reference to Figures 2 and 3 of the accompanying drawing, the said mould comprising two ring parts, a core consisting of two rings and an intermediate

wedge shaped ring the latter being forced into position by the expansion of an inner expansible ring part which completes the formation of the mould.

Thirdly:—The use in combination with the cores claimed in the prior claims, when made in several segmental parts or sections, of a key with screwed stem to take into a screwed hole in the parts of the core to facilitate the withdrawal of the core from the vulcanized tyre cover.

Dated this 20th day of December, 1915.

GEORGE SHAW & Co.,
35, Temple Row, Birmingham,
Chartered Patent Agents.

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A.D. 1915. JUNE 29. No. 9454.
BYRNE'S COMPLETE SPECIFICATION.

(1 SHEET)

[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

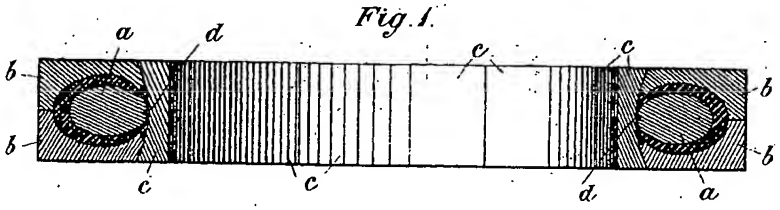


Fig. 2.

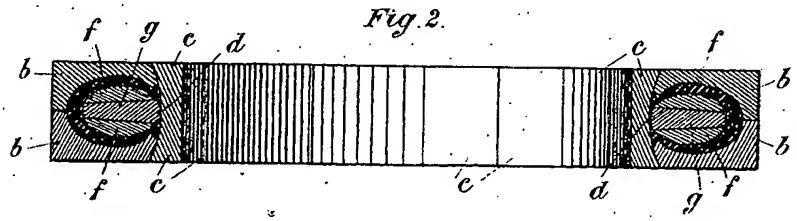


Fig. 3.

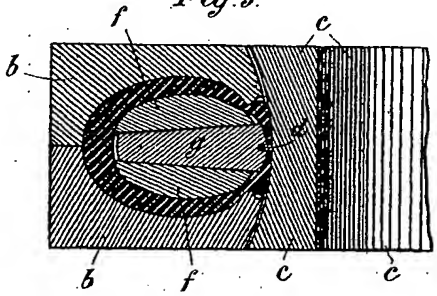
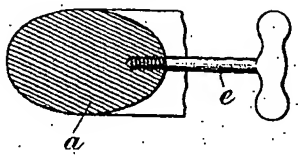


Fig. 4.



[This Drawing is a reproduction of the Original on a reduced scale.]

Fig. 1.

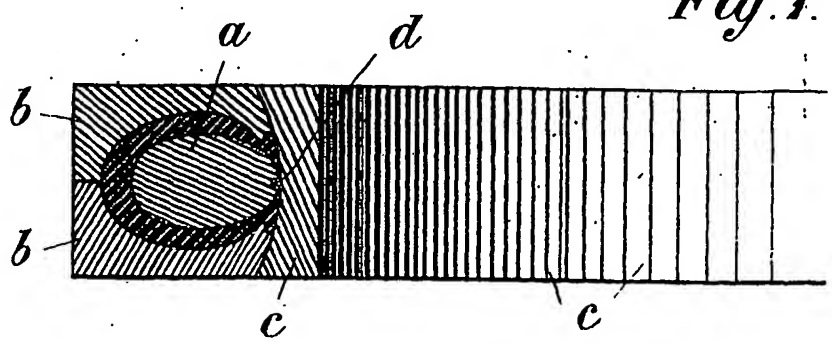


Fig. 2.

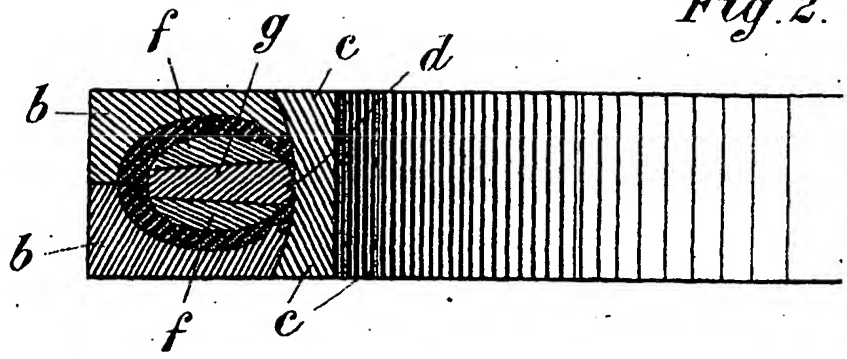
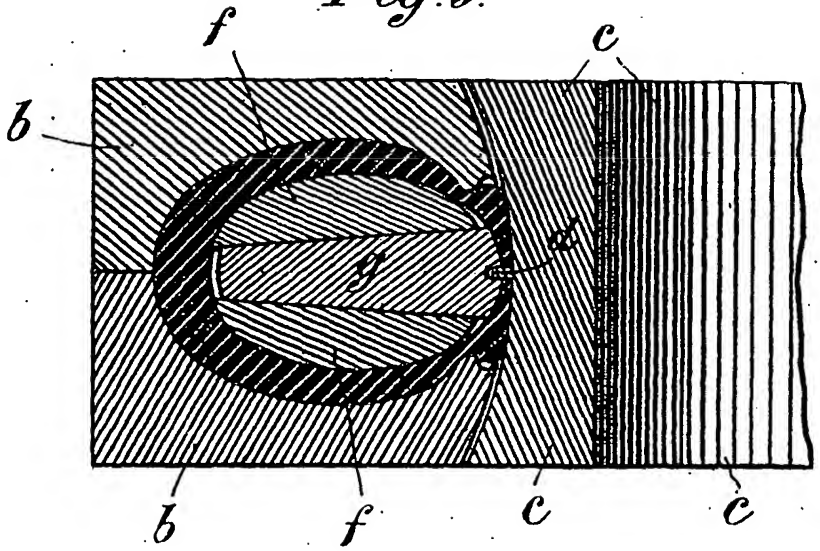
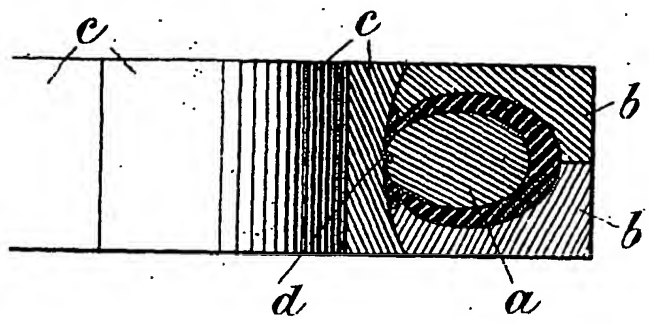


Fig. 3.





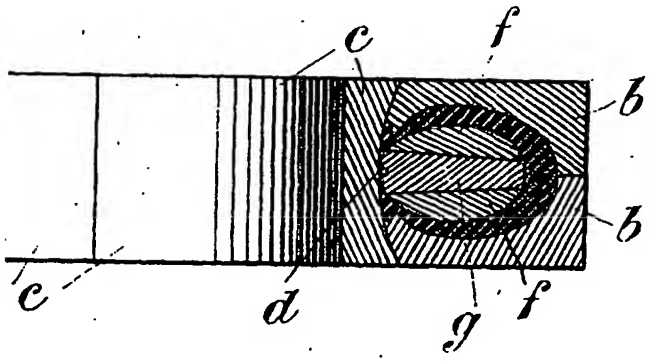
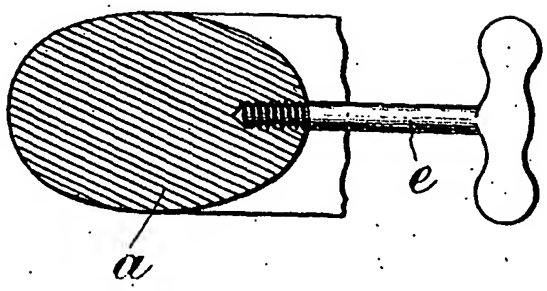


Fig. 4.



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